

CLAIMS

What is claimed is:

1. A surgical instrument seal assembly for mounting to a cannula for the insertion of a surgical instrument therethrough while maintaining a fluid seal around the surgical instrument, the seal assembly comprising:

an upper body portion having an upper surface that defines a throughbore extending completely through the seal assembly;

a lower body portion projecting below the upper body portion wherein the lower body portion defines a cannula receiving opening adapted to mount the seal assembly on the cannula; and

a unitary valve seal comprising:

an upper seal portion having a mounting portion wherein the mounting portion is rigidly mounted in the upper body portion adjacent an interior portion of the upper body portion, said interior portion opposing the upper surface, the upper seal portion being mounted about the throughbore; and

a lower seal portion extending from the upper seal portion, the lower seal portion being adapted to seal around the surgical instrument.

2. The surgical instrument seal assembly of claim 1, wherein the valve seal further comprises a stay wherein at least a portion of the stay is encapsulated in the valve seal.

3. The surgical instrument seal assembly of claim 2, wherein the stay is unitarily formed with the lower seal portion.

4. The surgical instrument valve seal assembly of claim 1, wherein the upper seal portion and the lower seal portion are integrally formed from the same material and wherein the valve seal further comprises a stay that is partially encapsulated in the lower seal portion.

5. The surgical instrument seal assembly of claim 1, wherein the valve seal is
5 formed from an elastomeric material.

6. The surgical instrument seal assembly of claim 5, wherein the elastomeric material is selected from the group consisting of silicone, plastic elastomers, polyisoprene, butyl rubber, neoprene and natural rubber.

7. The surgical instrument seal assembly of claim 1, further comprising a
10 duckbill valve in the lower body portion.

8. The surgical instrument seal assembly of claim 2, wherein the stay is adapted to resist inversion of the valve seal when an instrument is withdrawn from the valve seal.

9. The surgical instrument seal assembly of claim 8, wherein the stay is made from a material selected from the group consisting of polyethylene, polypropylene, nylon,
15 and plastic elastomers.

10. The surgical instrument seal assembly of claim 2, wherein the stay is shaped to substantially match the lower seal portion.

11. The surgical instrument seal assembly of claim 2, wherein at least a portion of the stay is encapsulated in at least a portion of the lower seal portion.

20 12. The surgical instrument seal assembly of claim 11, wherein the stay further comprises a circumferential flange above the at least a portion of the stay encapsulated in at least a portion of the lower seal portion.

13. The surgical instrument seal assembly of claim 12, wherein the stay further includes a circumferential upper wall disposed above the circumferential flange.

14. The surgical instrument seal assembly of claim 2, wherein at least a portion of the stay is approximately frustoconical in shape.

5 15. The surgical instrument seal assembly of claim 2, wherein the stay further comprises a plurality of flexible members.

16. The surgical instrument seal assembly of claim 8 wherein the stay has a lower portion encapsulated by the valve seal material and forms a unitary structure.

10 17. The surgical instrument seal assembly of claim 8, wherein the stay has a lower portion encapsulated by the valve seal material and forms a unitary structure.

18. A valve seal for use in surgical instrument seal assembly, the valve seal comprising:

an upper seal portion;

a lower seal portion extending from the upper seal portion wherein the lower seal portion is adapted to seal around a surgical instrument; and

a stay wherein at least a portion of the stay is encapsulated in the lower portion of the valve seal.

19. The valve seal of claim 18, wherein the stay is unitarily formed with the lower seal portion.

20 20. The valve seal of claim 18, wherein the upper seal portion and the lower seal portion are integrally formed from the same material.

21. The valve seal of claim 18, wherein the valve seal is formed from an elastomeric material.

22. The valve seal of claim 21, wherein the elastomeric material is selected from the group consisting of silicone, plastic elastomers, polyisoprene, butyl rubber, neoprene and
5 natural rubber.

23. The valve seal of claim 18, wherein the stay is adapted to resist inversion of the valve seal when an instrument is withdrawn from the valve seal.

24. The valve seal of claim 18, wherein the stay is made from a material selected from the group consisting of polyethylene, polypropylene, nylon, and plastic elastomers.

25. The valve seal of claim 18, wherein the stay is shaped to substantially match
10 the lower seal portion.

26. The valve seal of claim 18, wherein the stay further comprises a circumferential flange above the at least a portion of the stay encapsulated in the lower seal
portion.

27. The valve seal of claim 26, wherein the stay further includes a circumferential
15 upper wall disposed above the circumferential flange.

28. The valve seal of claim 18, wherein the stay further comprises a plurality of flexible members.

29. The valve seal of claim 27, wherein the stay further comprises a plurality of
20 flexible members.

30. The valve seal of claim 18, wherein at least a portion of the stay is approximately frustoconical in shape.

31. The valve seal of claim 18, wherein the stay has a lower portion encapsulated by the valve seal material and forms a unitary structure.

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